ART. XXXI.—*A Treatise on Intraocular Tumours; from Original Clinical Observations and Anatomical Investigations.* With one Chromo-Lithographic and fifteen Lithographic Plates. By H. KNAPP, M. D., late Prof. of Ophthalmology and Surgeon to the Ophthalmic Hospital, in Heidelberg. Translated by S. Cole, M. D., Chicago. 8vo. pp. 323. New York: William Wood & Co., 1869.

THE author in his preface gives the following reasons for the study of the subject of his treatise: 1st. "Because the diseases here spoken of are perfectly harmless and masked in their earliest stages, but on further growth become so horrible and destructive to the patient and to those about him, that they awaken of themselves the highest sympathy of the physician; and, 2d. Because I am convinced that intraocular tumours especially are destined to throw light upon many general questions of fundamental significance for the theories and therapeutics of tumours in general."

He states, that in the eye malignant diseases are generally discovered in their early stages, since any disturbance of the vision sends the patient promptly to his surgeon; but if the seat of lesion were elsewhere, as, for example, in the mammary gland of women, dangerous and even fatal progress may have been made in its development, when it is presented for the first time for medical treatment. Moreover, the diagnosis of these growths in their incipiency is rendered possible by the means for testing vision, and by the ophthalmoscope, by which the deepest recesses of the eye are opened to our inspection, and lessons in pathology are afforded which can be obtained by the examination of no other portion of the body.

Moreover, the operation of enucleation of the eyeball intact, containing a growth which experience has shown will if undisturbed produce death, if performed whilst the sclerotic is yet normal and before the germs have found their way into the tissues of the orbit, or the disease has extended along the optic nerve, enables the surgeon to apply the *experimentum crucis* to the procedure of operative interference, and to ascertain its value for the eradication of malignant disease; a method of treatment which has been brought into such serious doubt by the numerous failures which have been observed in operations undertaken for the ablation of such tumours situated in other tissues.

As a field for the observation of the pathological anatomy of such morbid growths, an examination of the very instructive and well-executed plates in Dr. Knapp's volume will convince one that the eye thus diseased is unsurpassed.

As the result of many years of observation at his clinics, the examination of the literature of the subject, and the collection and arrangement of appropriate cases coming under his own notice, Dr. Knapp divides ocular tumours into two classes only, viz., Glioma (encephaloid) of the Retina, and Sarcoma, either melanotic or unpigmented, of the Choroid, and arranges his book into two parts accordingly.

In this classification he follows the nomenclature of Virchow, based on the anatomical characters of the growths; and whilst by no means denying that true carcinoma may not occur in the eye, he states that he has not observed it, nor found any convincing evidence thereof in the histories of cases reported by others.

He next gives with great clearness the clinical histories and the results of seven cases of glioma, accompanied by excellent lithographic representations of the appearances presented to the unaided eye, as well as of those observed by the aid of the microscope.

Of his clinical histories seven illustrate glioma, and a very short *résumé* of them will give the reader an idea of their progress and terminations.

CASE 1.—A child eighteen weeks old, one eye entirely blind, the other able to follow a light, in whose right eye the parents had observed at first a yellow reflection, followed by enlargement and vascularity of the whole eye. This was enucleated and placed in Müller's fluid for future examination after hardening. This solution consists of potass. bichromat., two to three grammes; sodæ sulphat., one gramme; aquæ, one hundred grammes.

The other eye presented marked symptoms of the same disease, and even with the naked eye the lower portion of the fundus was seen to glisten with a yellor colour. The child recovered from the enucleation and was dismissed in six days. Two years passed, and no local return of the disease had occurred in the right orbit.

The other eye had progressed and was then disorganized. In six months more a large tumour had grown from the left orbit, and several large growths were observed on the cranium; death in a fortnight. No abstract can do justice to the account of the pathological changes found after death in the cranium and liver, nor can words give any idea of the appearances of the tumours of the orbit and of the diploe, both macroscopic and microscopic, as depicted by the author's well-executed illustrations.

CASE 2.—A child, age four years; for a year a yellow reflex had been observed behind the left pupil; four weeks since rapid growth of eye, with headache and vomiting, commenced. The case was recognized as glioma of retina, with cerebral complications. Enucleation was performed, from which the child recovered in ten days, to die, however, in four weeks in a comatose condition.

The lesions in the eye are well described and depicted, but an autopsy was refused.

CASE 3.—Is a description of the pathology of an eye with glioma, in the author's collection of specimens.

CASE 4.—Child two and a half years old. More than a year since a white reflex from the fundus was observed by the family physician, which was followed by enlargement of the eye, great congestion and a corneal ulcer. On examination, pronounced to be glioma. On enucleation, the optic nerve was found thickened, and it was drawn forward and severed as far within the orbit as possible. In two months a reddish medullary tumour was seen projecting from the orbit, and in four weeks more death took place. No autopsy.

CASE 5.—Child two years old; first seen October, 1862. At birth the father saw in left eye a bright reflection resembling that of a cat's eye; when examined, the eye was enlarged, the cornea barely to be recognized, and a soft extra-ocular tumour was found in the orbit. Extirpation of globe and tumour was performed. The other eye was found by the ophthalmoscope to contain a yellow mass in its fundus. In four weeks a fleshy tumour had sprung from the orbit from which the ball had been removed, and death took place in January, 1863.

CASE 6.—Left eye of a boy, two and a half years old, enucleated, which became diseased five months before; became red, opaque, and protruded; and was found on examination, after death, to present a pure glioma, with extension to the optic nerve, pia mater, cerebrum, cerebellum, and spinal cord.

CASE 7.—A boy, age two and a half years, whose right eye had apparently been destroyed by scarlatina, and from which a tumour the size of a walnut protruded, soft, vascular, and easily bleeding. It was pronounced glioma, and removed. Child dismissed in seven days after operation. In three months he presented himself, with a tumour in the orbit, and a second growth as large as a hen's egg, in the parotid region. The orbital tumour, in size equal to the egg of a goose, was extirpated, and found to be a pure glioma in structure. Child was dismissed in a few days, and his family informed of the probable speedy fatal termination of the disease.

General Description of Glioma of Retina.—In appearance this growth resembles soft, brain-like marrow, of a red-gray colour; and under the microscope, in the fresh state, it consists of round cells about the size of lymph corpuscles, each having a large nucleus and one or more nucleoli, or, perhaps, none at all. After having been placed in Müller's fluid, the cells resemble those of the granular layers of the hardened retina. They lie in an intercellular material, homogeneous when fresh, but granular and seen as a fibrous network with a binocular microscope and an objective magnifying from two hundred to three hundred diameters, after treatment with a hardening solution.

The morbid process is believed to be a proliferation of the retinal granular layers, which extends itself to other tissues, either by immediate contact or by dissemination of its germs, which become then self-generative. Thus an extension along the optic nerve to the brain or spinal cord, or a metastasis to some internal organ, is the most frequent cause of death, even after the fibrous capsule of the eye has been invaded and the entire orbit occupied by large vascular, and ulcerating tumours.

In the first stage, glioma is recognized by examination by the oblique illumination, or by the ophthalmoscope, after the use of atropia, and by testing the field of vision. A yellow or white reflection from an elevated mass in the fundus may be observed, which by the precise methods now in use, and described at length by the author, can be measured in its thickness by the examination, by the ophthalmoscope, by the upright image, by ascertaining with what convex lens the details are clearly perceived, and in its other dimensions by a comparison with the optic disk. In this manner in his first case, a coloured lithograph of which is given, showing the appearances of the fundus, a portion of the diseased retina was seen with positive $\frac{1}{18}$, and the summit of a growth upon it could be yet distinguished through postive $\frac{1}{16}$, from which he infers that the retina was thicker in the first described portion by about 0.5 mm., and the apex of the growth 1 mm. advanced beyond its normal limit, and therefore thickened to this extent, and that the disease extended to 3 mm. in breadth and 4 mm. in length.

In the second stage, symptoms of irritation and inflammation appear, and the media lose their transparency; the tension is increased, and the whole eye is notably enlarged from the rapid growth of the tumour, and there is pain in the eye and its vicinity.

In the third stage, the pseudoplasm passes beyond the globe by extension through the optic nerve to the chiasm, when total blindness may ensue, or to the brain, when the usual symptoms of tumour in the nervous centres may be developed; or the cornea or sclerotic may be perforated, and a soft ulcerating growth may be rapidly developed, bleeding frequently and freely, and causing death by exhaustion where the cranium has not been invaded or other organs destroyed by metastasis to them of the malignant germs.

Nothing is known as to the causes, remote or immediate, of glioma, but it is essentially a disease of early childhood, and must, in some of the cases recorded, have been in existence at birth.

In the first stages, the disease may be mistaken for an unpigmented sarcoma of the choroid, from which it is to be distinguished principally by its true yellow metallic lustre.

In later stages, after vision has been entirely lost, and the media are less transparent, Dr. Knapp recommends for the examination the use of direct sunlight, which is best employed by the aid of a heliostat, so arranged as to throw the light into a dark chamber.

There are several morbid changes that may be mistaken for glioma, as for example, simple detachment of the retina, the presence of a cysticercus or suppurative choroiditis, etc., and for the differential diagnosis the reader is referred to Dr. Knapp's volume.

The prognosis is very unfavourable, and in well-established cases the results have been invariably of a fatal character, either from exhaustion or hemorrhage after perforation of the globe, or from extension to the encephalon and the development of cerebral glioma. Nevertheless, as has been lucidly described by Robin and Virchow, the proliferation of a given tissue is not so malignant a process as is the growth of true cancer, which consists of a stroma of connective tissue having epithelial-like cells in its areola. Furthermore, the dense capsule of the globe offers a formidable obstacle to the extension of a hyperplasia which arises in the granular elements of the retina. Evidence is also not wanting that retrogressive metamorphoses of a fatty or calcareous nature, may arrest the growth and convert it into a permanent and innocent atrophy.

As for treatment, the author says, should a unilateral glioma of the retina be recognized early, enucleation of the globe is indicated, with the division of the optic nerve as far back as possible.

For the second stage, with increased tension and marked inflammation, he recommends the extirpation of the eye together with the orbital contents, to remove entirely the germs that may have extended beyond the fibrous capsule.

Even the last stage, with perforation and exophthalmos, may be treated in the same manner with some hope of averting a fatal result. In bilateral glioma, the study of case first teaches that both balls should be enucleated, since in the one which was removed the disease was arrested, no recurrence had appeared at the end of two and a half years, and death ensued from the development of the disease in the other eye. This branch of his subject is terminated by a statement of the medical treatment recommended by Sichel for procuring the atrophy of encephaloid growth of the eye, which consists of local and general bloodletting, mercury, and the most active of the alteratives; and he does not favour the opinion that malignant growths can be treated successfully in this heroic manner when the powers and nutrition of the body are already in a failing state.

Part Second is devoted to the discussion of Sarcoma of the Choroid, based upon the clinical histories of eight cases, with their pathological lesions, general and local, carefully described, and clearly depicted in numerous lithographic illustrations.

Case 8.—A man aged 65, disease first observed eighteen months previously, and ascertained on careful inspection to be a morbid growth, grayish-black in colour, protruding into the anterior chamber, and detaching the peripheral margin of the iris. Enucleation was performed, and the eye externally found perfectly normal in appearance. On section three tumours were found covered with retina, and springing from the choroidal layer.

Nine months later the man died with all the symptoms of malignant disease of the liver, lungs, and stomach. No autopsy was made. No return of the disease had occurred in the orbit.

Case 9.—Woman aged 62. For six months vision had been impaired, tension increased, and pain had been present in left eye, which, on examination, presented a morbid growth close behind its lens. Enucleation was performed with entire success, since no relapse, local or general, has occurred at the time of writing, three years after operation. On section a tumour was found springing from the ciliary region, covered with retina, and composed of sarcomatous tissue.

Case 10.—Male, aged 73, vision of left eye impaired for five months, is found to present a morbid growth just behind the lens. The ball, with a tumour at its posterior pole, was enucleated and found to contain a sarcomatous growth. There was no local return, but in six months death occurred, and although no autopsy was made, the author believes that the lungs, liver, and kidney were, from the symptoms observed, the seats of metastatic sarcoma.

Case 11.—A male aged 63 presented himself with a tumour which protruded from the lids, and had evidently caused a perforation of the nasal side of sclerotic, and now filled the orbit.

This growth with the orbital contents was removed, and on examination proved to be a melanotic glio-sarcoma. He recovered from the operation in ten days and was discharged, but when last heard from he was dying with a tumour of the orbit, and a growth in the abdomen.

Case 12.—Age 44. This man presented a growth of a bluish-black colour, which was removed by extirpation of the ball and the orbital contents, and found to be a medullary melano-sarcoma. A relapse occurred in the orbit, and a tumour appeared there, which three months after the first operation was radically removed, and he enjoyed good health for two months. Four months later death occurred from metastasis to the lungs and liver, and a tumour the size of a hen's egg was found within the cranium after death.

Case 13.—Mr. S., aged 52, suffered for three years; first, with impaired vision, and next with acute pain, which led to the enucleation of the globe. A tumour the size of a hazelnut was found within the ball, which proved on dissection to be a sarcoma, with spindle-shaped cells. The disease appears to have been totally eradicated by the operation, since no relapse nor metastasis has occurred, and two and three-quarter years have elapsed.

Case 14.—J. N., aged 30. A globular tumour, yellow in colour, seen with $+\frac{1}{6}$, was detected in the fundus of right eye, with the ophthalmoscope, which, from the author's experience, was believed to be a choroid sarcoma, since all tumours within the eye, not occurring in children, he holds to arise from the choroid.

The anterior chamber, iris, tension, and general appearance of the eye were normal; the field of vision was three-quarters of its proper extent; fingers could be counted at four or five feet, and there was no pain, yet enucleation was proposed and performed. A tumour of the size of a hazelnut was found, composed of white vascular sarcomatous tissue. No recurrence of the disease was observed. The man died in seven months of debility, and the author believes that from the circumscribed nature of the growth, and its radical extirpation, this case may be considered one of permanent cure.

CASE 15.—V. W., aged 6 years, was operated upon by enucleation of the bulb, for a growth which could be readily perceived just behind the lens, and which on examination proved to have its origin from the choroid. The wound healed quickly, and at a period of two and three-quarter years after, the boy enjoys excellent health.

Although in some cases there might be no macroscopical difference observed between glioma and sarcoma, yet with the microscope the sarcoma is seen to consist of a tough and more fibrillated intercellular substance, and of cells, round, elongated, or spindle-shaped, containing each a large well-defined nucleus, with one or more bright and well-marked nucleoli; when pigmented it exhibits in the cell contents granules of brownish-black colouring matter.

It is met with more frequently in the choroid proper, although the ciliary body appears to be a frequent point of development. Covered by the retina the tumour may encroach upon the vitreous space, and press forward the iris, lens, and cornea, giving rise to symptoms of increased ocular pressure, and glaucomatous inflammation; the ball becomes enlarged, and is perforated by the pseudoplasm which then vegetates in the orbital tissues; lobular masses may protrude from the opening between the lids, the conjunctiva gives way, and a freely ulcerating surface is presented to view.

Death by exhaustion from this local lesion is anticipated by metastasis to other organs, necessary to existence, as for example to the brain, lungs, liver, pleura, stomach, spleen, or kidneys, where after death morbid growths of a character similar to the choroidal sarcoma are found.

Of the etiology nothing is known further than that cases have been observed which had a traumatic origin.

As to prognosis, sarcoma terminates fatally sooner or later, since no case of spontaneous cure has been observed with precision, although in malignancy it is second to carcinoma, since it belongs to the class of homœoplastic tumours. Of the seven cases clinically reported, three have had no relapse, and may be regarded, "if we are inclined to optimism" as radical cures, whilst the other four died within a year from the date of operation, with evidences of generalized sarcoma.

Even this proportion is considered by the author as too favourable for our present knowledge upon this subject, but it affords proof that the operation is the more sure, and the cure more probable, the earlier the disease is diagnosticated and the ball extirpated.

Graefe says, however, that "he can remember no case in which after a very thorough extirpation of a tumour of this nature, the state of apparent cure had lasted more than four years."

The treatment advised by Dr. Knapp is the immediate enucleation of the ball whenever a diagnosis can be clearly made of a growth as yet intraocular. He advises that the optic nerve should be examined to ascertain the probable extension to it of the pseudoplasm, and where this is suspected he directs that the nerve should be drawn forward, and divided as deeply as possible in the orbit.

Even when glaucomatous inflammation is present, and the ball is distended, the operation may be successful, as in Case 13. Should secondary or local recurrences, be subsequently found, he advises the total extirpation of the contents of the orbit, with a view to spare the patient the horror to himself and those about him, of a disgusting lesion on his face. Where metastasis has occurred the treatment can only be symptomatic, and need not be further discussed.

This production of Dr. Knapp is worthy of careful study, and reflects much credit upon him as a skilful clinical observer and accomplished pathologist. His views as to classification and nomenclature will meet with opposition, and time will decide whether glioma is a multiplication of the retinal granular layers, or a hyperplasia of the connective tissue. However unfavourable the results of these reported cases may appear, it should lead practical surgeons to use increased diligence in the early diagnosis of these malignant growths since it is only in their earliest stages that an operation for their removal can be performed with any prospect of a radical cure. W. T.

ART. XXXII.—*On the Etiology of Bright's Disease, with Remarks on the Prophylaxis.* By GOUVERNEUR M. SMITH, M. D., Physician to the New York Hospital, etc. 8vo. pp. 34. Transactions of the New York Academy of Medicine, 1869.

DR. SMITH has embodied in this paper, which was originally read before the New York Academy of Medicine, the statistics of three hundred and eight cases of Bright's Disease, of which histories are to be found in the medical records of the New York Hospital. These statistics will be of value to any one interested in the pathology of this disease, but it is especially in relation to its etiology and prophylaxis that the pamphlet before us treats.

In reference to the appearance of albumen in the urine, Dr. Smith asks whether it may not, under certain circumstances, be a salutary symptom. "May it not be," he says, "an effort of nature to remove from the system a material which might be converted into an inimical substance?" Nature, he thinks, is so conservative in her processes, that we have no right to regard the escape of albumen from the blood into the renal secretion as in all cases due to mechanical causes. Moreover, he has found that in patients threatened with uræmic symptoms the appearance of a large amount of albumen in the urine was often followed by an improvement of the symptoms. With a view of testing how far the amount of albumen in the urine depended upon the quantity of albuminous food eaten, he directed that the urine of two patients should be examined daily: first, while they were allowed an ordinary mixed diet; and, secondly, while they were restricted chiefly to rice and arrowroot. The result in both cases was, that the amount of albumen excreted was very much diminished during the ingestion of starchy food. While there is, therefore, no question that the restricted diet is of advantage in the treatment of the disease, there is equally no doubt that the excesses of the table play very frequently a large part in its causation, and this remark is true as well of eating as of drinking.

To the use of alcoholic liquors has generally been ascribed much of the renal disease that exists in this country and England, and the result of Dr. Smith's observation is to confirm the general impression in this respect, notwithstanding the effort made by Dr. Dickinson, of London, to prove the contrary. Dr. Smith thinks that Dr. Dickinson's conclusions, although apparently correct, are liable to the criticism. that among the fifty patients classed as those dying from other causes than delirium tremens, and among whom it will be recollected the disease of the kidneys was almost as frequent as among the fifty dying from mania à potu, may have been many who had been at some time in their lives intemperate, and this source of error will always be present in hospital practice. As a more certain way of arriving at the truth, our author compares the mortality from Bright's disease with the prevalence of intemperance. In New York the excessive use of ardent spirits is greater than in any of the large cities of the world, and the proportion of deaths from Bright's disease to deaths from all causes, is found to be greater than elsewhere.